



Achieving American Leadership in the Wind Supply Chain

Summary

Land-based and offshore wind are expected to be a cornerstone for achieving U.S. clean electricity generation objectives, including 100% clean electricity by [2035](#) and an [30 gigawatts \(GW\) of offshore wind by 2030](#). Meeting these goals will require significant expansion of domestic supply chains and installation of unprecedented amounts of wind capacity.

To meet this challenge, researchers compiled a report examining the U.S. land-based and offshore wind energy supply chain, including raw materials, processed materials, components, sub-components, and recycling (see Figure 1).

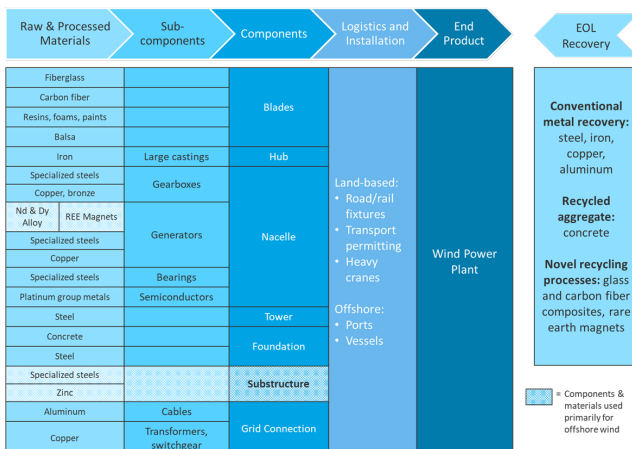


Figure 1. Land-based and offshore wind supply chain overview

Key Findings and Opportunities

The report identifies several key U.S. wind supply chain challenges and opportunities to help advance grid decarbonization and create jobs and economic opportunity for U.S. workers:

- **Accelerate offshore wind supply chain development.** The domestic supply chain for offshore wind towers, blades, nacelles, and substructures is in its infancy. Several manufacturers have announced the intent to begin production at U.S. facilities, but growth needs to accelerate to meet the 30 GW by 2030 goal with primarily domestic supply.
- **Maintain and expand the land-based wind supply chain.** Domestic content in land-based wind turbine blades has declined in recent years. Keeping blade and other component production facilities in the United States while scaling up the land-based wind-component supply chain will protect and expand American jobs and support the Administration's clean energy goals.
- **Develop offshore wind port and vessel infrastructure.** Offshore wind will require

specialized ports and vessels. Port development could spur clustering opportunities, such as the establishment of new manufacturing facilities to supply offshore wind components. There are only a handful of vessels globally that can install the large offshore wind turbines that will be used in U.S. projects, and only one under construction that will meet the requirements of the [Jones Act](#). Although the U.S. offshore wind industry can leverage international vessels to accelerate near-term deployment, global demand will be high, and building ports and vessels in the United States [would create](#) new jobs and opportunities for U.S. maritime industries and help developers of U.S. offshore wind projects avoid bottlenecks and delays

- **Improve supply chain competitiveness through R&D.** Expansion in wind technology R&D could increase the competitiveness of the U.S. supply chain competitiveness for offshore and land-based wind and allow U.S. suppliers to scale up. Topics could include blade manufacturing automation, additive manufacturing of large castings and forgings, and modularization and onsite manufacturing of large components such as blades and towers. Such research would also result in domestic intellectual property development, accelerate clean energy deployment, and fundamentally alter U.S. competitiveness. In areas such as large castings and forgings, R&D would have benefits beyond wind—for example, both hydropower and nuclear energy require large castings that cannot currently be produced in the United States.
- **Expand training programs to support the wind workforce.** Finding and training workers with a wide range of specialized skills for building and maintaining wind energy facilities are critical challenges. Wind-related job totals in the United States reached [116,800 full-time wind workers in 2020](#). Meeting the unprecedented expansion required to meet the Administration's clean energy goals will require training and

development for a range of professions including design, installation, operations and maintenance, component and subcomponent manufacturing and assembly, and materials production.

- **Improve land-based wind logistics.** Current blades, towers, and nacelles are becoming too large to efficiently transport over existing road and rail networks, and moving components is further challenged by varied state and local transport permit requirements. Making components more modular, along with policy and regulatory solutions, could reduce the challenges presented by overland transport of these components.

Policy Next Steps

The following policies would help to meaningfully address the challenges and opportunities identified above. A complete discussion of policy opportunities can be found in the report *America's Strategy to Secure the Supply Chain for a Robust Clean Energy Transition: U.S. Department of Energy Response to Executive Order 14017: America's Supply Chains*.

- **Enact legislation to provide tax incentives** to support domestic clean energy manufacturing and deployment, including incentives for clean energy production, building new manufacturing facilities, and for the ongoing operation of those facilities.
- **Prioritize financing of offshore wind ports and vessels** through Department of Transportation Maritime Administration programs and the DOE Loan Programs Office.
- **Fund transportation improvements and standardize transport permitting requirements** for large wind components that need to cross jurisdictional boundaries, in partnership with the Department of Transportation and state and local governments.

- **Engage government and the private sector to expand research, development, and demonstration** of technologies to enhance U.S. wind supply chain competitiveness and reduce logistical requirements. ■

Download the full document and the corresponding other documents that are part of the DOE response to the supply chain executive order at:
www.energy.gov/policy/supplychains

